

EXECUTIVE SUMMARY

Background and Study Rationale: USAID has provided Title II food assistance through schools and health centers to Honduras for over two decades with the objective of reducing malnutrition, hunger and poverty. The distribution of food has also acted as an incentive for increased school attendance and greater utilization of health services. In July 1990, with the assistance of USAID and other donors, the Government of Honduras initiated a coupon program (bonos) through a specially formed entity "**Programa de Asignación Familiar**" (PRAF) to subsidize the incomes of the poorest segments of the population, providing a safety net against food insecurity and malnutrition during a period of economic adjustment in the country.

An important concern of USAID/Honduras is whether and in what form Title II food aid should be continued, through traditional programs of direct distribution, or whether monetizing Title II commodities to subsidize the coupons is a more cost-effective option for achieving the same objectives. The cost-effectiveness study will address these questions. The study is part of a broader program of A.I.D.-funded cost-effectiveness studies being undertaken by the Latin America and Caribbean Health and Nutrition Sustainability (LAC/HNS) contract in an effort to shed light on and improve the quality, financial soundness and sustainability of nutrition programs in the LAC region.

Study Purpose: The purpose of the study is to identify household level effects of subsidies in the form of food versus income (coupons) and to estimate the differences in the cost-effectiveness of these alternative forms of subsidies. The study will focus on the three types of programs: school, maternal and child health, public works. These programs receive significant USAID assistance, which together are estimated to cover about 25% of the Honduran population. Because the main program types have different objectives (i.e., those designed primarily to improve school attendance and enrollment; those aimed at improving food consumption and use of health services; and public works programs to provide unskilled employment and build infrastructure), the "food versus cash" question needs to be asked within the context of each program type.

The three program types covered by this study actually encompass several distinct programs. The school-based programs include the national school feeding program (**Programa de la Merienda Escolar**) and one of the two coupon programs run by PRAF--the **Bono Mujer Jefe de Familia (BMJF)**. The maternal and child health programs include the **Programa de Alimentación Complementaria (PAC)** and the second coupon program, the **Bono Materno Infantil (BMI)**. PAC includes both the daily delivery of meals to children in early childhood development centers run by the National Social Welfare Board (**Junta Nacional de Bienestar Social** or JNBS), and the monthly distribution of dry food rations to malnourished women and children in MOH health centers and nutritional rehabilitation centers. Finally, the public works programs to be studied are the Food-for-Work (FFW) program administered by JNBS and SECOPT and other government-sponsored public works projects which pay cash wages.

The study's overall research questions are summarized in Box 1.

BOX 1
Key Study Questions

- What is the cost per unit of increase in food consumption adequacy achieved in MCH and public works programs?
 - What is the cost per net increase in health services utilization in MCH programs?
 - What is the cost per unit of increase in primary school attendance, enrollment, achievement in school programs?
 - Among the food programs, what is the cost per beneficiary and per household reached in school feeding, MCH take-home, MCH on-site, and FFW programs?
 - Among the coupon programs, what is the cost per household reached in the school and MCH programs?
 - What disincentives or undesired outcomes (e.g., lower quality of health services due to health worker overload from program administrative tasks, discouragement of longer child spacing by increasing coupons with number of children) are associated with participation in each program?
 - What additional benefits are derived from each program (e.g., delivery of essential micronutrients through food programs), and how important are these?
 - What are some potential areas for improving program efficiency?
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The objective of the analysis will be to quantify the food consumption, health services utilization and schooling effects of the alternate forms of subsidies, in relation to program costs. The two main sources of data include: 1) a survey of nationally representative households, and 2) program evaluations based random samples of program participants and non-participants. The national household survey is underway and is being conducted by USAID to evaluate the use of Title III program resources. This survey is expected to provide information on national coverage and participant profiles for each program. In addition to these sources, trends in outcome variables of interest (for example, school enrollment and attendance, health services utilization) will be obtained from databases maintained by MOH, MOE, PRAF and CARE.

For the program evaluation surveys, data collection is presently planned to include approximately 60 MCH centers (and 20 lactarios), 160 schools and 10-15 public works projects. A sample of households, centers and schools will be selected randomly from program participant lists drawn from well-functioning, program sites/centers/schools located in low-income and high malnutrition areas of eight Departments (states). These will be compared to similar households and schools in non-program areas. School and health center cost data and participant cost data will be collected from the same sample of sites. For both, the program evaluation surveys and the national household survey, a private Honduran firm - Ateneo de Agro Industria (ADAI) - has been contracted directly by USAID/Honduras to carry out all primary data collection. Technical

direction for the program evaluation study will come from LAC HNS staff and consultants (except the family planning component which is under the technical guidance of the USAID Office Population's Evaluation project). Data will be analyzed by LAC HNS (family planning by Evaluation project) in the U.S. and by the local contractor in Honduras.

School, health center and household level data collection will be staggered over a 8-month period and is expected to be completed by November 1994. The data collection schedule will deal with seasonal effects by spreading out data collection in all comparison groups equally across the seasons. Cost data will be collected during this period as well. Data analysis will be performed by LAC HNS during December 1994-September 1995. Interim progress reports will be available beginning after the first three months of data collection. The final reports are expected to be presented to USAID/Honduras in September 1995. Products from the study will include three individual program reports: school programs, MCH programs and public works programs; and a cross-cutting, synthesis report.

Measures of Program Effects: For the school programs, the key effectiveness variables studied will be education effects, as measured by differences in school test scores, enrollment, attendance, student retention and drop-out rates for boys and girls at each grade level, comparing program and non-program schools for the *merienda* and coupon programs. Effectiveness of MCH and public works programs will be measured through household and individual (mothers and children under 9 years) food consumption, anthropometry, morbidity and household expenditures on food. In the health center-based programs (food ration distribution and BMI coupons), indicators of effective use of health services, including coverage of key services (e.g., ORT use, contraceptive prevalence) and women's knowledge, attitudes and practices regarding infant feeding will be included.

Other effects to be examined are potential disincentives that may be associated with program participation. Other benefits and spin-off effects of the programs will be noted to the extent possible from existing data.

Measurement of Costs: The cost analysis will identify the relative overall efficiency of coupon versus food programs as they are currently being implemented in schools and health centers, and cash versus food for work. The study will not attempt to answer specific questions of operational efficiency, or generate prospective estimates of the costs of options which are not currently being implemented. Cost estimates will be disaggregated to provide some indication as to where inefficiencies may exist.

The analysis of costs will focus on routine operating program costs; start-up cost comparisons will not be possible as food programs began 30 years ago. Operating costs will be determined by type of inputs (staff, materials, capital etc); type of activities; level (central, regional/departmental, area/district, center/school); and who incurs the cost (program versus participant). Because some of the cost data are national aggregates, the study will apply an algorithm for allocating these costs to lower level units.

Analysis of Cost-effectiveness: The cost-effectiveness of food versus income transfer will be analyzed through the three independent comparisons of existing programs: 1) coupons versus "dry" food in health centers versus cooked food in day care centers; 2) coupons versus food in schools; and 3) cash versus food for work. The study will not provide definitive answers regarding the merits of one over another type of program (school, health center and public works-based programs), given the dissimilar objectives and cost-effectiveness indicators of each program. However, the cross-cutting or synthesis report will present these data in a format which allows agencies such as USAID to get a clear picture of the relative costs, nature and magnitude of effects of each type of program.

Section I contains the study rationale and purpose, section II an overview of the study, each sub-study is discussed in more detail in sections IV through VI. An overview of the samples and components of questionnaires for all sub-studies is in Tables 1 and 2 respectively. The attachments contain conceptual frameworks, copies of draft questionnaires, and tentative analysis plans for each sub-study. Sample design and selection procedures are described in Attachment 6.

COMPARING THE COSTS AND EFFECTIVENESS OF ALTERNATIVE FOOD SECURITY AND NUTRITION PROGRAMS IN HONDURAS

I. STUDY PURPOSE AND RATIONALE

Honduras is one of the poorest countries in the Western Hemisphere, with an estimated population of 5.3 million in 1991 (World Development Report, 1993). Extreme poverty affects over 50% of the national population and nearly 80% of the rural population, which constitutes 57% of the total. The national economy at US\$580 per capita GNP, lags behind all but Haiti, Guyana and Nicaragua in the region. In the aftermath of the recession, economic stabilization and adjustment programs are reported to have increased income earning opportunities in agricultural and export-oriented activities, but have increased hardships for net consumers of food in rural areas and urban dwellers. According to the World Bank (Staff Appraisal Report, 1992), an estimated 62% of Honduran households can not afford a diet that would meet recommended calorie and protein intakes. In rural areas nationwide, almost half of all children under five are considered undernourished. Some 39% of all children under five years are considered stunted. Recent evidence has accumulated showing the negative effect of malnutrition on productivity and on generating inefficiencies in achieving sectoral objectives in health, education, agriculture and others (Behrman, 1992).

For over two decades, USAID has provided Title II food assistance to Honduras, with the objective of reducing malnutrition, hunger and poverty. The distribution of food is also intended to act as an incentive for better utilization of schools and health services. USAID food commodities under the P.L. 480 Title II program are the major source of food distributed in the various food supplementation programs that have been developed by the Government of Honduras, which traditionally have delivered food subsidies through health centers, schools and public works projects. Other donors provide food assistance as well.

In July 1990, the Government of Honduras initiated a coupon program (bonos) through a specially formed entity "Programa de Asignación Familiar" (PRAF) to subsidize the incomes of the poorest segments of the population, providing a safety net against food insecurity and malnutrition during a period of economic adjustment in the country. The food coupons constitute an income transfer which can be used by beneficiaries to buy food or other goods or even converted to cash. The sale of P.L. 480 food commodities is an important source of funding for the coupon program.

USAID/Honduras is now undergoing an in-depth review and restructuring of its portfolio. Both, food and monetary resources (dollar and local currency funds) are declining rapidly. An important concern of the USAID Mission is whether and in what form food aid to Honduras should be continued. Specifically, USAID needs objective data on which programs are most effective in improving the well-being of the poorest households in Honduras as reflected in food consumption, health services utilization/access and access to/participation in schooling, and whether direct distribution, or monetizing, Title II commodities to subsidize the coupon program is a more cost-effective option for achieving the same objectives.

Because the main program types have different objectives (i.e., those designed primarily to improve school attendance and enrollment; those aimed at improving food consumption and nutrition; and public works programs to provide unskilled employment and build infrastructure), the "food versus cash" question needs to be asked within the context of each program type. Since food may work better in one type of program and cash in another, USAID is interested in how its food resources should be allocated across the three major program types in which food is utilized, i.e., school feeding, maternal and child health (MCH) programs, and food-for-work.

The purpose of this cost-effectiveness study is to provide information to help USAID answer these questions. The study consists of three sub-studies, one for each of the three types of programs in which food or coupons are provided: primary school programs, maternal and child health programs (food distributed in bulk from health centers and/or on-site feeding at community centers), and public works programs. In each sub-study, the effects of providing a package of food commodities will be compared with the effects of providing a coupon (or wages in cash), or no benefit at all. The objective of the analysis will be to quantify the nutrition, health services utilization and schooling effects of the alternate forms of subsidies, in relation to program costs. Data will be analyzed from two sources:

- (1) A national survey of 2800 randomly selected households representing 6 area segments, of which three are rural and three are urban.
- (2) Program evaluations where samples of schools, health centers, lactarios, public works sites, program participants and non-participants selected from comparable areas with and without programs will be surveyed.

In addition, program records available through implementing agencies will be used to review trends in key variables before and after the initiation of the coupon programs.

The study is a part of a broader program of A.I.D.-funded cost-effectiveness studies being undertaken by the Latin America and Caribbean Health and Nutrition Sustainability (LAC HNS) contract in an effort to improve the quality, financial soundness and sustainability of nutrition programs in the LAC region. A.I.D.'s Latin American and Caribbean Bureau is interested in the implications of the study's results for other countries in the region, many of which are facing similar questions about how existing food programs can be made more effective.

II. DESCRIPTION OF THE PROGRAMS STUDIED

The study will focus on the three types of programs (school, health center, public works) receiving significant USAID assistance, which together are estimated to cover about 25% of the Honduran population. The World Bank (Staff Appraisal report, 1992) estimates that programs receive approximately US\$16 million in food commodities each year from USAID, the World Food Programme (WFP), and the European Economic Community (EEC). Of the total investment in these programs, 35% supports the coupon programs, 33% supports MCH feeding, 20% supports food-for-work, and 12% supports school feeding. The Government of Honduras

(GOH) contributes logistics and administrative support, with the assistance of voluntary agencies such as CARE, especially in food distribution programs.

The U.S. donates approximately 18,000 tons of P.L. 480 Title II food aid annually to Honduras. Of this, 10,000 tons are channeled as food through the health, school and day care center systems (including 900 tons channeled directly into CARE's programs, which benefit 75,000 people), and the remaining 8,000 are monetized by CARE and used to support CARE's activities in managing the food distribution.

Another 85,000 tons of Title III food commodities are donated each year and monetized by the Agriculture office of the USAID Mission to create Economic Stabilization Funds (ESF), which are given to the Government of Honduras for use by various ministries. One of the beneficiaries is the **Programa de Asignación Familiar** or PRAF, which, with support from other donors as well, manages the GOH's two **bono** or coupon programs in collaboration with the Ministries of Health and Education.

The three program types covered by this study actually encompass several distinct programs. The school-based programs include the national school feeding program (**Programa de la Merienda Escolar**) and one of the two coupon programs run by PRAF--the **Bono Mujer Jefe de Familia** (BMJF). As indicated by its name, the BMJF was originally designed to benefit households headed by women and uses the school system to distribute the coupons to the beneficiary population.

The maternal and child health programs include the **Programa de Alimentación Complementaria** (PAC) and the second coupon program, the **Bono Materno Infantil** (BMI). PAC includes both the daily delivery of meals to children in early childhood development centers run by the National Social Welfare Board (**Junta Nacional de Bienestar Social** or JNBS), and the monthly distribution of dry food rations to women and children in MOH health centers and nutritional rehabilitation centers. The health center-based food ration distribution (where CARE provides food) is known as the **Programa de Alimentación Materno Infantil** or PAMI.

The public works program to be studied include those administered by JNBS and SECOPT. Participants in the selected projects will be compared with those in other government public works programs which do not provide food as part of the participants' wages/compensation.

Background information on the design and estimated coverage of each program follows¹.

¹ During the transition to a newly elected government, the distribution of coupons stopped since approximately November 1993, and is scheduled to begin in mid-1994.

A. School Programs

1. Programa de la Merienda Escolar

The objective of the school feeding program is to reduce school absenteeism, desertion and class repetition. The program has been in operation since 1959, and is estimated to have reached approximately 484,200 primary school children in 1991, or about 52% of the total population of the public school system. The program is directed towards public school children everywhere except in the capital city of Tegucigalpa; schools in rural areas or marginal urban areas are given priority. Some 3,700 schools in 9 departments in the poorer western regions of the country participate (Comayagua, Copan, Choluteca, Intibuca, La Paz, Lempira, Ocotepeque, Santa Barbara and Valle). All children in the grades selected participate in the program. There is no further targeting within grades. If it is not possible to feed all children, priority is given to those in first second and third grade.

In the CARE-assisted program selected for the study, the food is prepared at the school and given to the children for consumption at school. A beverage consisting of a blend of corn-soybean flour fortified with vitamins and minerals and mixed with water (food value of 200 calories and 8 grams protein) is provided for each child, 160 days a year (2.5 lbs/month/child). This is estimated to cover 20% of the daily energy requirements and 50% of daily protein requirements. The program is implemented by the Ministry of Education (MOE). Each food ration is valued at US\$0.04 per feeding day per student. Approximately 50% of the parents of beneficiaries pay a monthly fee of one Lempira (Lp) to help cover administrative costs.

Program evaluations have identified the following concerns, some of which will be further explored in this study: the small size of the subsidy both, in economic and nutritional terms; relatively high operating costs, estimated at about half the value of the subsidy; and lack of targeting, except for the exclusion of Tegucigalpa.

2. BMJF Coupon Program Through Schools (Bono Mujer Jefe de la Familia)

The PRAF bono program was developed to mitigate the effects of structural adjustment on the most vulnerable elements of the Honduran population. The pilot BMJF program began in May 1990. As its title suggests, the program was originally intended to target female-headed households which had been shown in a recent survey to be disproportionately represented among the poorest households. After a three-month effort of attempting to identify such households, it was concluded that they were not numerous enough to justify basing a large-scale poverty alleviation program exclusively on this characteristic. Accordingly, the target population of the program changed, though the title did not. The BMJF's target population came to consist of all low income children in primary schools (grades 1-6) in areas most affected by malnutrition and extreme poverty. The latter areas were defined as municipalities in 7 of Honduras' 18 Departments where the prevalence of extreme poverty and of malnutrition exceeded determined levels. Within the targeted municipalities, the teachers determine eligibility to participate in the BMJF program. Once a child is deemed eligible as a beneficiary, provision of coupons

continues until the child completes sixth grade or drops out of school; there is no further consideration of the child's income or nutritional status.

The coupon subsidy amounts to Lps. 20/month per child. The coupons are distributed to eligible parents by teachers three or four times a year, contingent on the child attending school. By the end of 1991, mothers of 120,000 school children had received two coupons per year, equivalent to US\$37 per year for each child in school, with a limit of three children per household. These schools also participate in the school feeding program. Average administrative costs of the BMJF program were estimated at 16% in 1991 by the World Bank.

School enrollment appears to have increased during the time since the BMJF program was introduced. However, it is unclear whether enrollment increased during this period in non-BMJF program areas as well (e.g., due to population growth, migration, increased demand for schooling independent of the coupon program), or whether the increase in BMJF areas was due to a shifting of the children from non-participating to participating schools. It is also not clear as to the socio-economic groups in whom this increased enrollment occurred.

B. Maternal and Child Health Programs

1. MCH Feeding (Programa de Alimentación Complementaria. PAC)

The MCH supplementary feeding program was started over 30 years ago as a means to motivate use of MOH services, strengthen the health and nutrition activities of the MOH, and improve household and individual (mothers and children) food consumption. The indicator used for household selection is the presence of pregnant and lactating women or malnourished children under 6 years of age. In 1991, the program covered approximately 173,000 women and children (61% are in the 1-6 year age group, 37% are pregnant women, 2% are volunteers who work in the program) and operates in 16 of 18 Departments.

Two delivery systems are used by PAC. The first is a sub-program known as PAMI (**Programa de Alimentación Materno Infantil**). Food is distributed to women in monthly rations of uncooked food (corn, rice, beans and oil) through MOH health centers. PAMI serves 305 MOH health centers and approximately 44,000 beneficiaries in 1991. The second modality is provision of prepared meals to beneficiary children at community and early childhood development centers of the National Social Welfare Board (**Junta Nacional Bienestar Social, JNBS**), known as **Lactarios de la Comunidad**, **Centros Comunitarios (CNC)**, and **Centros de Desarrollo Integral del Niño (CEDIN)**.

The weighted average of monthly rations in the two delivery systems is estimated at 500 calories/day and 19 grams of protein/day per beneficiary, or approximately 25% of the daily recommended levels of intake. USAID provides 70% of all food provided to this program. The estimated average administrative cost of the PAC program is 30% of the total program cost. Program evaluations have identified the following concerns: inadequate targeting and excessive time burden on local MOH staff.

2. BMI Coupon Program (Bono Materno Infantil)

The BMI coupon program was started in December of 1990 and targets poor households with children under 5 years of age and pregnant and lactating women. At the national level, the municipality sites of the BMI program have been selected in manner virtually identical to that of the BMJF program; i.e., on the basis of the prevalence of malnutrition and the prevalence of extreme poverty, while taking into account the coverage of the feeding programs. Within the targeted municipalities, it is Ministry of Health personnel working at the health centers who determine who is eligible to participate in the BMI Program. By 1993, the program had been extended to 9 departments, with beneficiaries totalling 133,283.

The BMI program was designed for monthly coupon distribution at health centers, conditional upon completion of scheduled health care visits (controles) or immunizations. Each coupon is worth Lps. 20. Up to three children may participate per family, plus the mother, indicating a maximum household allowance of coupons worth Lps. 80. On average, a household receives approximately 2 coupons. Administrative costs are estimated at 16%.

There have been reports that the added burden of BMI activities on the health staff has resulted in longer waits for services by health center clients. USAID/Honduras is concerned about possible effects on quality of care and on use of family planning services. Another concern with the BMI program is a lack of targeting to the intended beneficiaries due to inadequate identification and enrollment methods, inconsistent application of eligibility criteria, and inability of the information system to safeguard against multiple enrollment in several centers by the same beneficiaries.

C. Public Works Programs

1. Food-for-Work Program

The Food-for-Work (FFW) programs in Honduras are assisted through CARE, World food program and EEC countries. Honduran counterpart agencies include JNBS, SECOPT and CODEFOR. They provide food and employment to un- and under-employed, low-income households, in urban and rural areas. In 1991, the program has provided assistance to 85,000 families. Work in a specific community development project is the basic condition of eligibility. The projects range from construction, maintenance and repair, and training. Administrative costs are estimated to average more than 40% of total costs. Sustainability is the main concern identified in program evaluations.

2. Cash-for-Work Projects

Participants of similar socio-economic status in public works projects which compensate with cash rather than food will be used as the comparison group for FFW participants.

III. STUDY OVERVIEW

Data obtained from the national survey of 2,800 randomly selected households will be analyzed to develop program participant profiles and the distribution of the types and size of subsidies reaching the national population. Attachment 1 provides the questionnaire and Attachment 2, the analysis plan. The relationship of program participation with other variables common to both the national household survey and program evaluation surveys will be used to control for selectivity bias in the evaluation surveys (this is a concern as the latter sampling frames consist of program participants and differences among program groups may be due to unobserved characteristics associated with program participation rather than the effects of the program itself). The analysis will explore how robust the estimates are to different control for sample selectivity.

The remainder of this report deals mainly with the program evaluation surveys.

A. Objectives and Overall Design

The objective of this research is to determine and compare the costs and effects of alternative USAID-supported programs of food and coupon transfers aimed at increasing food consumption, health services utilization, and school enrollment and attendance. As noted above, the primary user of the results of the study will be USAID/Honduras, to inform decision-making about whether and in what form to provide assistance to Honduras through the use of P.L. 480 food commodities in order to most efficiently achieve desired outcomes. A number of other agencies including Honduran government entities, other donors and non-government organizations are also expected to benefit from the information that will be generated. In particular more specific cost estimates, quantified program impacts and the household perspective will be captured in this study.

Cost-effectiveness analysis will be used to compare the relative efficiency of alternative delivery systems in achieving the objectives of school-based, MCH-center based and public works programs. The study thus consists of three separate sub-studies: 1) the school sub-study, comparing in-school feeding (*merienda escolar*) with BMJF coupon distribution in terms of effects on schooling variables; 2) the MCH sub-study, comparing food ration distribution and BMI coupon distribution through health centers and on-site feeding at JNBS sites (*Lactarios*, etc.) in terms of food consumption and health services utilization effects; and 3) the public works sub-study, comparing the consumption effects of food for work and cash wages.

The research design for each sub-study will be a cross-sectional comparison of program participants in the different programs and a non-program, control group for the school feeding and MCH studies. In the public works study, the impact of food given as wages will be compared with cash for wages in similar projects, and analyzed separately for female workers versus male workers. The sub-studies will quantify achievement of the specific objectives of each program in terms of various household-level indicators and will measure and control for a variety of intervening factors which affect nutrition, health and education effects among

program participants in order to isolate the direct effects of program participation. The operational costs of each program will be estimated and comparative indicators calculated of cost per desired outcome.

Overviews of the sample sizes and questionnaire components are given in Tables 1 and 2 located at the end of this section.

B. Measurement of Program Effects

Critical issues in the measurement of program effects will be isolation of the independent effects of the programs studied and the attribution of measured differences to program effects. This will be accomplished by estimating the importance of differences in socio-economic and demographic profiles of different program and non-program participant groups; and selecting, where feasible, comparison groups with similar characteristics. Furthermore, in the data analysis, multivariate techniques will be used to control for confounding variables which may affect outcomes.

Measurement of outcomes attributable to the program interventions requires a thorough understanding of the structural and household-level variables which may mediate the food consumption, health and education effects on program participants. Food consumption and anthropometric effects, for example, are likely to be a function of: (1) the pre-program status of beneficiaries, (2) the size or level of the food or income supplement provided, and (3) the duration of sustained participation (Beaton and Ghassemi, 1979; Anderson, 1981; Kennedy et al. 1986). Schooling and health utilization effects may occur differentially among participating households based on socio-economic status and geographic location of communities and programs. Household food consumption, and food intake of women and children are likely to be influenced by who receives and controls the use of the supplement, and this, in turn, is likely to be influenced by whether food or cash is provided (Rogers, 1990; 1991).

A number of structural and other variables may mediate the effects as well. These variables include: food habits and prices, maternal education and support, proximity to health centers and schools, employment opportunities and others. In order to control for the effects of some of these factors, the sample households will be selected so that comparison groups are as similar as possible in all other respects but program participation. Data on other factors that may influence the impact variables will be collected at the household and community levels to identify potential sources of non-program effects. These include food prices, access to markets, other interventions and others.

For the school programs, the key effectiveness variables studied will be education effects, as measured by differences in school test scores, enrollment, attendance, student retention and drop-out rates for boys and girls at each grade level, comparing program and non-program schools for the merienda program and BMJF-participating schools. Food consumption and health variables will not be measured in the school study.

Effectiveness of MCH and public works programs will be measured through food consumption, child anthropometry, and household expenditures on food. In the MOH health center-based programs (PAMI food rations and BMI coupons), the following types of indicators will be used: effective use of health services, including coverage of key services (e.g., immunization, contraceptive prevalence) and women's knowledge, attitudes and practices regarding infant feeding.

Other effects to be examined are some potential disincentives that may be associated with program participation. For instance, in health center programs, the cost of travel and waiting time and lower quality of services due to health worker overload from program administrative tasks, eligibility criteria (number of children under five and pregnant/lactating women) that may discourage longer spacing and contraceptive use.

Attempts will also be made to document other benefits and spin-off effects of the programs to the extent possible from existing coverage records and data on conditions at baseline. For example, the public works sub-study will attempt to identify contributions of food-for-work programs to community water and sanitation infrastructure. Given the recent recognition of the importance of micronutrients in the diet, the study will also examine the relative contribution to intakes of micronutrients of food programs that distribute commodities fortified with micronutrients versus income supplement programs that rely on households making choices among locally available foods, which may not provide the necessary micronutrients.

C. Measurement of Program Costs

The basic purpose of the cost analysis will be to identify the relative overall efficiency of coupon versus food programs as they are currently being implemented in schools and health centers, and cash versus food for work. The study will not attempt to answer specific questions of operational efficiency (such as comparisons of alternative transportation and storage mechanisms), or generate prospective estimates of the costs of options which are not currently being implemented. Nevertheless, there will be an attempt to disaggregate the data in such a way that would provide clues as to where inefficiencies may exist (though may not provide definitive answers about what is more efficient).

The basic approach to developing program cost estimates will be to disaggregate costs by:

- Type of inputs (staff, materials, capital etc);
- Type of activities (Initially, the disaggregation will be by the activities for which disaggregated data are already available; later an attempt will be made to categorize the data according to types of activities which are policy issues;
- Capital versus recurrent costs; variable versus fixed costs;
- Level (central, regional/departmental, area/district, center/school); and

- Who incurs the cost (program versus participant);
- Administrative costs versus costs/value of the benefit.

Because some of the cost data are national aggregates, the study will apply an algorithm for allocating these costs to lower level units. Practical considerations in precisely disaggregating certain costs will limit to some extent the degree to which sensitive cost estimates can be developed for each study site. Data will also be collected at each center/school on key variables likely to influence costs (e.g., size of the center, distance from regional/central headquarters).

While data will be collected on the cost of all resources used (whatever the source, including beneficiaries), the final cost-effectiveness indicators will be based only costs incurred by the programs. Costs to the beneficiaries (e.g., to obtain the food or coupon) will be used primarily to net out the value of the food or income transfer.

The efficiency of food versus income transfer will be analyzed using three independent comparisons of existing programs: 1) coupons versus "dry" food in health centers versus cooked food in JNBS centers; 2) coupons versus food in schools; and 3) cash versus food for work. The study will not provide definitive answers regarding the merits of one over another type of program (school, health center and public works-based programs), given the dissimilar objectives and cost-effectiveness indicators of each program. However, the cross-cutting or synthesis report will present these data in a format which allows agencies such as USAID to get a clear picture of the relative costs, nature and magnitude of effects of each type of program.

D. Data Collection

Multi-stage randomized household surveys of families participating in the different programs will be the primary source of information on effectiveness for the MCH and public works programs. The control for the MCH study will be drawn from households residing in the designated area of influence of health centers not participating in any program. Food consumption estimates - a key measure of effectiveness for the MCH and public works sub-studies - will be obtained from three separate measurements of 24-hour recall per household. Interviews with teachers, school children and their parents and review of school records will be the main source of effectiveness data for the school sub-study. In addition to household surveys, data at randomly selected centers and schools will provide information on regularity of participation, drop-outs, schooling and health center utilization trends over a 4-5 year period (to capture trends before and after the introduction of the coupon programs in 1991).

As noted previously, a key complementary activity to this study is the national household survey that will be conducted to evaluate the Title III program in Honduras concurrently with the cost-effectiveness study. The Title III survey will provide data from a nationally representative sample of almost 2800 households on program participation (covering each of the 7 programs included in our study) by socio-economic and demographic characteristics in each of 6 area segments of the country: 1) Tegucigalpa, 2) San Pedro Sula and other large metropolitan areas,

3) medium and small urban areas, 4) rural areas in the departments of Choluteca and Valle, 5) rural areas in Cortes and Francisco Morazan and west of them, and 6) other rural areas (departments in the east), excluding Islas de Bahia and Gracias a Dios. Because of its size and national scope, the Title III survey will provide information on current national estimates of the numbers of participants in each program, as well as on differences in beneficiary profiles and the success of targeting strategies used by each program.

Given that the national household survey will provide us a profile of participants and non-participants, in order to overcome potential selection biases, the program evaluation surveys for the school and MCH sub-studies will use as sampling frames, the current participant lists and will limit the possibility of selecting distinctly different households in comparison groups by focusing the study exclusively in socio-economically deprived areas (municipalities identified as "mal", "muy mal", or "deficiente" according to a recent study by the **Fundación Hondureña de Inversión Social**). In the public works sub-study, we will limit project sites to areas where minimum wages are paid among all comparison groups. An overview of the estimated sample sizes for each sub-study is shown in Table 1.

To avoid biases introduced in program costs by activities carried out during the introduction of the coupon program in a new area, a study sample inclusion criterion will be that the program should have started at least 6 months prior to data collection for health centers (implying at least 6 monthly distributions completed) and at least 4 coupon distributions (implying at least 18 months of operation) at schools. Thus cost estimates developed for the coupon programs will be the best approximations of average running costs, which are most comparable to the cost estimates that will be obtained for food programs which have been operational for many years.

E. Schedule

The national household survey is underway and data collection is expected to be completed by July 1994. Data collection in the program evaluation surveys is expected to begin in May 1994 and be completed by early November 1994. School, health center and household level data collection will be staggered over a seven month period and the schedule includes spreading out data collection in all comparison groups equally across the seasons. Cost data will be collected during this period as well. Data analysis will be performed by LAC HNS during December 1994-August 1995. The final report is expected to be presented to USAID/Honduras in September 1995.

F. Research Team

The design and analysis of the three program evaluation sub-studies and technical assistance for their implementation is the responsibility of LAC HNS (with the exception of questions on family planning effects in the MCH sub-study which is the responsibility of the Evaluation project). A Honduran firm - Ateneo de Agro Industria (ADAI) has been contracted by USAID/Honduras to collect all primary data. LAC HNS has no line responsibility for field data collection or for managing the local contractor. However, LAC HNS will provide technical

support to USAID/Honduras staff in the technical oversight of the local contractor. ADAI has over two decades of experience in national and local household surveys and has been used frequently by the USAID Mission.

The members of the LAC HNS team and the role of each member are listed below:

- Dr. Tina G. Sanghvi (LAC HNS staff), Nutritionist: Team Leader and Principal Investigator for all components of all sub-studies
- Ms. Margaret Phillips (LAC HNS consultant), Economist: Principal Investigator for costs and cost-effectiveness design/analysis and interpretation
- Prof. Beatrice Rogers (Tufts University, LAC HNS consultant), Food Policy Specialist & Development Economist: Principal Investigator for estimating program effectiveness
- Lic. Miguel Calderon (LAC HNS consultant), Public Health Specialist/Demographer: National Coordinator and chief liaison with in-country counterparts
- Prof. Robert Magnani (Tulane University, LAC HNS consultant), Epidemiologist: Sample design and selection procedures for all estimating program effectiveness and family planning component design/analysis
- Dr. John Fiedler (LAC HNS consultant), Economist: design/data collection/supervision of cost analyses, cost-effectiveness analyses and report writing
- Mr. Peter Tatian (Urban Institute), Data Management Specialist: data management and analyses for all components and all sub-studies
- Dr. Anne Swindale (IMPACT Project staff), Development Economist: technical advisor for field operations, and training in food consumption data collection

From time to time, LAC HNS draws on the expertise of a Technical Advisory Group (TAG) to guide the development of the study methodology, review study progress and assess its results. The TAG advising this study is comprised of Prof. Jere Behrman (U. Pennsylvania), Prof. R. Robertson (Mt. Holyoke), Prof. S. Horton (U. Toronto), Dr. Jose Mora (LAC HNS staff), Dr. Thomas Bossert (LAC HNS Director).

Key technical counterparts in USAID include Karen Nurik and Glen Post in AID/Washington; Emily Leonard, David Losk, Stanley Terrell, Marta Larios and Laura Loux in USAID/Honduras.

Counterparts in program implementing agencies include: Sonia de Pino in the Ministry of Education, Dr. Alvaro Gonzalez Marmol in the Ministry of Health, Ing. Xiomara Gomez and Miriam Lleba in PRAF, and Mr. Northrup in CARE/Honduras..

NOTE: Tables 1 and 2 provide an overview of sample sizes and questionnaire components for all three sub-studies, and are on the following pages.

Table 1. STUDY SAMPLE SIZES

School Sub-study

	No. Schools	No. Children	No. Visits
Coupons	40	640	1
Merienda	40	640	1
Coupons & Merienda	40	640	1
Neither program	40	640	1
TOTAL	160	2560	

MCH Sub-study

	No. Centers	No. Households	No. Visits
Coupons	20	360	3
Food ration	20	360	3
Neither program	20	360	3
Lactarios (JNBS)	20	360	3
TOTAL	80	1440	

Public Works Sub-study

	No. Sites	No. Households	No. Visits
Cash wages			
- Male workers	5-10	300	3
- Female workers*	5-10	300	3
Food wages			
- Male workers	5-10	300	3
- Female workers	5-10	300	3
TOTAL	20-40	1200	

* Conditional upon locating adequate participants in this type of project.

Table 2. Questionnaire Components by Sub-Study

A. SCHOOL SUB-STUDY

A.1. Household Interviews

<u>Component</u>	<u>Frequency</u>
1. Socio-Economic Characteristics	Once

A.2. School Level

<u>Component</u>	<u>Frequency</u>
1. Food/Coupon Program Statistics	Once
2. Summary School Enrollment and Attendance Data	Once
3. Resource Use/Cost Data	Once
4. Mapping of Other Schools in the Area	Once

Table 2. Questionnaire Components by Sub-Study (Contd.)

B. MCH SUB-STUDY

B.1. Household Interviews

<u>Component</u>	<u>Int.1</u>	<u>Int.2</u>	<u>Int.3</u>
1. HH List and Characteristics	+		
2. Height/Weight		+	
3. Food Consumption	+	+	+
4. Expenditures		+	
5. Child Morbidity			+
6. Use of Health Services		+	
7. Program Participn. & Use of Food/Coupons	+		
8. Fertility			+

B.2. Health Center Questionnaire

<u>Component</u>	<u>Frequency</u>
1. Summary of Service Statistics and Inventory of Facilities	Once
2. Interviews With Staff	Once
3. Observation of Health Worker-Client Interactions (5 per center/condition)	Once
4. Exit Interviews With Clients (5 per center)	Once
5. Resource Use/Cost Data	Once

B.3. Community Level Data

<u>Component</u>	<u>Frequency</u>
1. Mapping of Health & Family Planning Services	Once
2. Mapping of Food Outlets	Once
3. Market Prices of Food	Once

Table 2. Questionnaire Components by Sub-Study (Contd.)

C. PUBLIC WORKS SUB-STUDY

C.1. Household Interviews

<u>Component</u>	<u>Int.1</u>	<u>Int.2</u>	<u>Int.3</u>
1. HH List & Characteristics	+		
2. Food Consumption	+	+	+
3. Expenditures			+
4. Child Morbidity			+
5. Income Sources and Labor Force Participation		+	
6. Program Participn. and Cash/Food Use	+		
7. Child Anthropometry		+	

C.2. Public Works Project Sites

<u>Component</u>	<u>Frequency</u>
1. Summary of Program Statistics	Once
2. Resource Use/Cost Data	Once

C.3. Community Level Data

<u>Component</u>	<u>Frequency</u>
1. Mapping of Food Outlets	Once
2. Market Prices of Food	Once

IV. SUB-STUDY I: SCHOOL PROGRAMS

The conceptual framework and questionnaires for the school sub-study are in Attachment 3.a. and Attachment 3.b. respectively. Questionnaire components are identified in Table 2. A tentative analysis plan is in Attachment 3.c.

A. Objectives and Key Research Questions

The objective of this sub-study is to determine the relative cost-effectiveness of income transfers (BMJF coupon) versus food supplements (merienda) distributed through schools in increasing school participation, especially by the groups who have often not fully participated, such as low-income households, female-headed households, female children, and children living far from schools. The main outcomes of the school feeding and coupon programs that are of interest to USAID/Honduras are benefits for school attendance, reduced retention and drop-outs, and increased rate and duration of school participation. The specific research questions addressed by this sub-study are summarized below.

Key Research Questions for the School Programs Sub-Study

- Do children in the coupon or food (merienda) program have better attendance, enrollment, test scores, promotion rates and lower drop-out rates?
- What is the program cost of providing food versus coupons in primary schools?
- What are the costs and effects of a combined coupon and food program?
- What is the cost per additional child day of education provided by food, coupons, and a combined program?

B. Data Sources

Data will be obtained from two main sources:

- 1) Nationally representative sample of 2800 urban and rural households.
- 2) In-depth study of 160 schools, and 16 (8 boys, 8 girls) randomly selected school children from each of the selected schools which are located in low income, high malnutrition areas.

B.1. National Sample of Households. A survey is currently underway of a nationally representative sample of 2800 urban and rural households, randomly drawn from six area clusters. Variables include: household demographic and socio-economic status, income and expenditure patterns, current participation status in each of food and coupon programs, and attendance in schools. See Attachments 1 and 2 for the questionnaire and analysis plan.

B.2. Schools Program Evaluation Survey. The objective of this survey is to obtain detailed information on program and comparable, non-program schools, especially in areas where the priority target group is located (i.e. rural, low income). The main activity in this sub-study will be collection of data during the school year on the amounts and timing of coupons or food received and their relation to attendance, enrollment, repetition and drop-out in the subsequent school year of the recipient children. Enrollment during the 1993 school year and drop-out or grade repetition in 1994 will be examined. In addition, enrollment will be analyzed by a retrospective analysis of attendance and enrollment data for BMJF and non-BMJF schools before and after the coupon (BMJF) Program was introduced in 1991.

Sampling Strategy for the Participating Schools Survey. The study population will be located in rural areas of 8 Departamentos (states) that have a large proportion of low-income households, high malnutrition and low food security. The study universe will include all rural primary schools in the study Departments that are located in municipalities classified in the country's 1992-93 Poverty Map as "muy mal", "mal" or "deficiente" (very poor, poor or deficient). The schools to be studied in these areas will be randomly selected from the following four comparison groups:

- Schools where only the food distribution (*merienda*) is implemented
- Schools where in addition to food, the BMJF coupon program is also implemented
- Schools with neither the food nor the coupon program
- Schools with only the coupon program, if such schools exist in sufficient numbers to permit conclusive statistical analyses.

Forty (40) schools in each comparison group will be selected. In each selected school, a sample of 16 children (8 girls, 8 boys) will be randomly selected from grades 1-6 (the number sampled from each grade will be based on proportional representation of that grade in total school enrollment). Where multiple classes are found per grade, one class will be randomly selected. Children will be selected irrespective of whether or not they participate in a particular program to obtain a measure of the school.

Data Collection and Analysis of the Participating Schools Survey. School records for the 1993 school year will be obtained through MOE from sampled schools. Data will be collected on: daily attendance by male and female students by grade, annual enrollment, school test scores, drop-out rates and retention rates at each grade level, as well as information on the distribution of food supplements daily and the dates and value of coupons distribution. Data collection is expected to take 6-months to obtain the information from 160 schools.

The parents of 16 randomly selected children will be interviewed with the assistance of the school teacher for information on household socio-economic status.

Each sample school and child will be assigned a unique number. Re-measurement will be conducted on at least five percent of the sample by supervisors. Data collection forms will be checked for completeness and consistency in the field, and the data entered, checked and cleaned in Tegucigalpa according to procedures that will be developed by the local contractor, in consultation with the LAC HNS data management consultant. Frequency tables of descriptive variables will be prepared by the Honduran data collection firm, and the data on disks will be sent to LAC HNS in Washington for further analysis.

Multivariate analysis will be conducted using schools as the unit of analysis to measure relationships between the key dependent variables (i.e., attendance, enrollment, drop-out, and repetition) and the following categories of independent variables among schools (food, coupon, food+coupon, neither food/coupon); and within schools (male/female, and by lower: grades 1 through 3; and higher grades 4-6):

School: size, teacher index (age/experience/education), no. years in operation, distance from urban center, distance from other schools, condition of physical facilities, average household characteristics of students (poverty index, female headed/other, distance from school, access to other schools, education of mother, occupation of head of HH, number of children/siblings); average size of subsidy given (number of coupons, amount of distributed).

Geographic location: department, municipality.

B.3 Other Data Sources

In addition to the above surveys, data maintained by MOE, PRAF and CARE on trends in school attendance and enrollment, and food and coupon utilization, by area and school, and by date of initiation of the coupon program will be used to supplement the analysis. This will focus on the area selected for the participating schools survey, i.e. low income, rural areas.

C. Cost-Effectiveness Indicators

As discussed above, the key education effects of interest are differences in enrollment, attendance, school scores, retention and drop-out rates at each grade level for boys and girls, for low-income families. The relative efficiency of food vs. coupons in improving attendance and enrollment, and reducing retention and drop-outs will be measured in terms of cost per specific desired outcome and cost per unit of food/income transferred as follows:

- \$ per additional school day attended (additional children enrolled x additional number of days school attended per child)
- \$ per child prevented from dropping out
- \$ per child prevented from repeating a grade
- \$ per additional child enrolled
- \$ per ration distributed
- \$ per intended beneficiary reached
- \$ per 20 lempiras transferred (net of participants costs)

V. SUB-STUDY II: MCH PROGRAMS

The conceptual framework for this sub-study is in Attachment 4 a. Questionnaires (household-level, health center/lactario-level, community-level) are in Attachment 4 b. Questionnaire components are identified in Table 2. A tentative analysis plan is in Attachment 4 c.

A. Objectives and Key Research Questions

The objective of this sub-study is to estimate the relative cost-effectiveness of income transfers in the form of the BMI coupons versus food supplements provided through health centers (delivered as take-home rations) in improving food consumption and health/family planning services utilization. The beneficiaries of interest are women of reproductive age, and children in the 0-59 months age group (for morbidity and anthropometry), and 0-9 years of age for food consumption. An important component of this study is measuring differences in family planning variables (number of desired children, birth spacing, contraceptive use) across the different program groups. Another component of this sub-study is comparing the net food consumption effects of food provided as take-home rations through health centers with food delivered as on-site feeding at JNBS day care centers.

Key Research Questions for the MCH Programs Sub-Study

- Does the distribution of coupons or food rations through health centers improve food consumption by low income households (in particular, mothers and children in these households) and improve health services utilization?
- What is the program cost of providing food versus coupons through health centers?
- What is the cost per additional household, child or mother provided with recommended levels of calories and nutrients (protein, vitamin A, and iron) through the food distribution program as compared with the coupon program?
- What is the cost per additional visit for primary health care (prenatal visit, well-baby check, family planning consultation, consultation for child illness) that is associated with the food distribution program as compared with the coupon program?
- What is the cost (to participants and programs) per 20 Lempiras worth of benefits provided per household in the food versus the coupon program?
- What is ratio of the \$ benefit transferred to a household and the \$ value of the additional food consumed?
- Is the daily, on-site or supervised feeding of cooked food a more effective mechanism to improve calorie and nutrient intakes by young children than take-home food programs?
- What is the cost per child provided recommended calories and nutrients through the on-site feeding program, and how does this compare with the take-home and coupon programs?
- What are the benefits (other than food) of the on-site feeding program as compared with take-home programs?
- Do the coupon or take-home food programs implemented through health centers increase or decrease the demand for children and contraceptive use?

B. Data Sources

Data will be obtained from two main sources:

- 1) Nationally representative sample of 2800 urban and rural households.
- 2) In-depth study of randomly selected 60 health centers and 20 JNBS day care centers, and a random sample of 18 households selected from participant lists at each of the sampled centers located in rural, low income, high malnutrition areas. The control group consists of 18 households (with either a pregnant women or child under 60 months), drawn at random from communities under the "area of influence" (designated by MOH) of 20 centers where neither food nor coupon programs are in operation.

B.1. National Sample of Households. A survey is currently underway of a nationally representative sample of 2800 urban and rural households, randomly drawn from six area

clusters. Variables include: household demographic and socio-economic status, expenditure patterns, household food consumption, heights and weights of preschool children, income, current participation status in each of food and coupon programs, attendance in schools. See Attachments 1 and 2 for the questionnaire and analysis plan.

B.2. Health Centers/Lactarios Program Evaluation Survey. The objective of this survey is to obtain detailed information on program and comparable, non-program health centers and program participants, especially in areas where the priority target groups are located (i.e. rural, low income).

Sampling Strategy for the Program Evaluation Survey

The geographic universe for this sub-study will be the 8 **Departamentos** (Santa Barbara, Copan, Ocotepeque, Lempira, Intibuca, La Paz, El Paraiso, and Choluteca) that have the largest proportion of low-income households, high malnutrition and low food security. Study health centers and JNBS centers (lactarios, CNCs, CEDINs) in these departments will be randomly selected from the following four comparison groups:

- Health centers offering only the MCH dry ration feeding program (PAMI)
- Health centers participating only in the BMI coupon program
- Health centers offering neither MCH food rations nor BMI coupons
- JNBS centers with on-site feeding located in municipalities meeting the socio-economic criteria (classified as "muy mal", "mal" or "deficiente" on the poverty map).

Twenty (20) centers will be selected in each comparison group. If a group does not have sufficient centers, MMD municipalities from the adjacent areas of Yoro in the northwest region of the country will be added to the sampling frame. For each center, communities will be sampled first, followed by 18 households (per center) of women of reproductive age and their children will be randomly selected from among current participant lists for each program or from communities in the designated area of influence of facilities offering neither food nor coupons. Households with either a pregnant woman or a child under 60 months of age will be chosen. Eighteen distinct households will be chosen from each health center/lactario for the survey. The women selected for the interview will be the mothers/primary caretakers of the sampled children, unless this woman is not a household member, in which case another woman of reproductive age will be chosen. All household questionnaire components will be administered to this woman.

Data Collection and Analysis

The first phase includes data collection from sample health centers and lactarios. In addition, data will be collected from a sample of 360 households in each of the four comparison groups (take-home food, coupon, on-site feeding, no benefit). The data

collection for the four comparison groups will be carried out throughout a 3-4 month period, so that seasonal effects will affect each comparison group equally.

Data will be collected from each household in three interviews over a period of two-three weeks using 5 teams of 4 interviewers and one supervisor each. These multiple contacts will accommodate the various questionnaire components. Dietary information for the household and the individual study subjects will be collected in each of these three, non-consecutive, 24-hour recalls (considered the minimum for stable estimates of individual caloric and nutrient intake) using food models and volumetric measures. An estimate of errors in recalling quantities of food consumed will be obtained during pre-tests through the use of pre-measured foods followed by a typical 24-hour recall in at least 75 households. In the case of on-site feeding, similar to the approach for other groups, estimates of the child's consumption of the day care center meals will be verified by volumetric measurement of sample meals. Mothers and day care providers will be asked specifically about the frequency and quantity of on-site food consumed by the child. The teams will make three visits to the lactarios and three visits to the households to obtain quantitative information on food consumed. The household family planning questionnaire will not be administered to the lactario group of households.

Household expenditures and food acquisition will be measured using a variable recall period chosen by the respondent to match the usual frequency of purchase. This will be recorded and then converted to an annual estimate in the presence of the respondent. The estimate of total income is not of interest in this analysis (due to its highly questionable precision, income will be substituted by expenditures for analyzing economic level), rather the variable of interest is labor force participation of different family members and sources of income by type of work.

In each sampled community, data will be collected on the market prices of a basket of important foods in local markets.

Anthropometric data will be collected once during the survey, and health center records will be used to obtain retrospective weight for age data on one sampled child per household. Child morbidity will be collected through 2-week recall.

Mothers will also be asked questions on use of preventive health and nutrition services, including prenatal checkups, growth monitoring of children, immunizations, and family planning services. Mothers will also be asked a number of knowledge, attitude and practices questions regarding their perceptions of intra-household nutritional priorities and needs.

Data on MCH and day care attendance will be collected at the health center, though sample households will be questioned directly about their attendance and receipt of food or coupons. Descriptive service statistics and characteristics of each health center will also be collected.

Because of particular concerns about the effects of the coupon program on quality of health services (i.e., that coupon administration possibly over burdens staff, to the detriment of service quality), focused observations of service quality and client exit interviews will be carried out in each study health center. A short list of key indicators of quality have been selected for each type of service, including questions related to adequacy and completeness of technical service delivery and health worker communication with the client and client satisfaction with the information and treatment received. Service quality data will be collected on five client interactions per condition (well-baby check, diarrhea, ARI, pre-natal checkup, family planning) for each health center. These components will not be covered for lactarios. The study will be able to measure whether there are significant quality differences between coupon and non-coupon centers, although changes in service quality due to the introduction of the coupon program cannot be verified, since baseline data do not exist.

Another means of measuring the effects of the coupon program on health center utilization will be to obtain multi-year data on per capita health services production in coupon and non-coupon centers, comparing pre-coupon program data with post-coupon introduction data.

Each sample center, household, and individual subject will be assigned unique numbers. Data collection forms will be checked for completeness and consistency in the field, and the data entered, checked and cleaned in Tegucigalpa according to procedures that will be developed by the local contractor in consultation with the LAC HNS data analysis consultant. Frequency tables of descriptive variables will be prepared by the Honduran firm, and the data on disks will be sent to LAC HNS in Washington for further analysis.

Multi-variate analysis using the household as the unit of analysis will be conducted to measure relationships between the key dependent variables (i.e., % adequacy of calories and nutrient intake, child anthropometry, utilization of key health center services) and the following categories of independent variables:

Household Characteristics: poverty index, agricultural vs. non-agricultural, female headed/other, mother's occupation, distance from center, education of mother, occupation of head of HH, number of children, number of coupons and value of food subsidies;

Health Center: volume of consultations, range of services offered, number of years in operation, distance from urban center, distance from other centers;

Geographic location: department, municipality;

Study group: food rations, coupon, neither food/coupon, on-site food.

C. Cost-Effectiveness Indicators

The main nutritional effects of interest are differences in daily individual food consumption (of calories, protein, vitamin A, iron and vitamin C) by women and children, anthropometric measures (weight-for-height, weight-for-age, height-for-age) of preschoolers (0-59 months) and household expenditures on food and non-food items. The health services utilization effects to be examined are appropriate use (i.e., with desired frequency) of key health services, particularly prenatal care, immunizations, growth monitoring, and family planning, including mothers knowledge, attitudes and practices regarding infant feeding and ORT.

The relative efficiency of food rations versus coupons in improving food consumption and health services utilization will be measured in terms of cost per specific desired outcome and cost per unit of food/income transferred:

- \$ per additional deficit household consuming >70% RDA for calories and nutrients (protein, vitamin A, iron)
- \$ per additional high risk person (women plus children 0-9 years) consuming >70% RDA for calories and nutrients (protein, vitamin A, iron)
- \$ per additional primary care service provided (prenatal + well-baby visit + family planning + sick child visit)
- \$ per 20 lempiras transferred (net of participants costs: provide an estimate of time used if value of this time cannot be estimated)
- \$ per additional 100 calories and units of nutrient RDAs consumed per deficit HH, and per high risk group
- \$ per ration distributed
- \$ per intended beneficiary reached

VI. SUB-STUDY III: PUBLIC WORKS PROGRAMS

The conceptual framework for this sub-study is in Attachment 5 a. Questionnaires are in Attachment 5 b. Questionnaire components are identified in Table 2.

A. Objectives and Key Research Questions

The objective of this sub-study is to estimate the administrative costs and effects on food consumption of food-for-work versus cash-for-work public works programs. The issue of male versus female control of household resources as a determinant of household and child nutritional adequacy will also be estimated if suitable study sites are found.

Key Research Questions for the Public Works Programs Sub-Study

- Does the distribution of food as wages in public works programs improve food consumption by low income households and mothers and children in these households, when compared with wages in cash?
- What is the program cost of providing food at work sites?
- What is the cost per additional household, child or mother provided with recommended levels of calories and nutrients (protein, vitamin A, and iron) through the food-for-work program as compared with the cash program?
- What is the cost per additional household, child or mother reaching adequate food consumption level through the food-for-work program as compared with the cash program?
- *Does the gender of the household head change the comparative merits of food versus cash in terms of household food consumption and/or health?

* Whether these questions can be answered depends upon the availability of project sites.

B. Sampling Strategy

The food-for-work study must be located in areas of confirmed unemployment to demonstrate and evaluate the role of providing food in lieu of wages and its impact on protecting household food security among the most vulnerable (unemployed). The study will need to seek out new sites representing communities with a high prevalence of food insecurity and malnutrition.

A complete listing of all food-for-work (FFW) projects that will be completed in the next several months will be reviewed in May to identify suitable alternative sites. A list of public works projects planned for implementation without FFW in areas of comparable socioeconomic conditions will also be developed in May.

The study population in the sites to be selected will include:

- Female participants in food-for-work projects, and women and children residing in their households
- Male participants in food-for-work projects, and women and children residing in their households
- Female participants in cash-for-work projects, and women and children residing in their households
- Male participants in cash-for-work projects, and women and children residing in their households

Because a key issue of interest in the interaction of cash versus food and male versus female control over resources, female participants will constitute a separate comparison group from male participants in order to estimate the separate effects of type of transfer and sex of participant on consumption.

The sample target will be 300 households in each comparison group, chosen from 5-10 FFW and cash-for-work projects, for a total of 1200 households. Depending upon the number of households participating in the FFW and cash-for-work programs, the household sample will be randomly selected from these lists. Because FFW workers are paid at two-week intervals, project pay lists will be used as the sampling frame.

C. Data Collection and Analysis

FFW participants and cash-for-work participants will be interviewed during the implementation of public works projects. Dietary information for the household and the individual study subjects will be collected in three non-consecutive 24-hour recalls (using food models and volumetric measures). Other information will be collected once in each round: household characteristics, food and non-food expenditures, income by source and earner, and labor force participation of all household members over age 9. Information on child morbidity will be collected once. Data on the nature and duration of each public works project, who participated, type and quantity of food received, etc. will be collected from each household and project work site, and will be specifically asked of household respondents to ascertain the amounts of food rations and wages they receive. In the case of cash-for-work households, information on wages received will be part of the data collection on income.

Each study household and individual subject will be assigned unique numbers. Data collection forms will be checked for completeness and consistency in the field, and the data entered, checked and cleaned in Tegucigalpa according to procedures that will be developed by the local contractor in consultation with the LAC HNS data analysis consultant. Frequency tables of descriptive variables will be prepared by the Honduran data collection firm, and the data on disks will be sent to LAC HNS in Washington for further analysis.

D. Cost-Effectiveness Indicators

The main food consumption effects of interest are differences in daily individual food consumption (of calories, protein, vitamin A, iron and vitamin C) by women and young children in the participating households and morbidity and anthropometric measures (weight-for-height, weight-for-age, height-for-age) of preschoolers (0-59 months). The income effects of interest are time use and level of activity, income sources, and household expenditures on food and non-food items.

The relative efficiency of food rations versus cash for work in improving household food security will be measured in terms of cost per specific measure of increased consumption and cost per unit of food/income transferred:

- \$ per additional deficit household consuming >70% RDA for calories and nutrients (protein, vitamin A, iron)
- \$ per additional high risk person (women plus children 0-59 months) consuming >70% RDA for calories and nutrients (protein, vitamin A, iron)
- \$ per 20 lempiras transferred
- \$ per additional 100 calories and units of nutrients consumed per deficit HH, and per high risk group
- \$ per ration distributed
- \$ per intended beneficiary reached

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